

3. Subbasin Assessment–Pollutant Source Inventory

This chapter describes the point and nonpoint pollutant sources within the Little Salmon River watershed. The nonpoint source descriptions are not intended to be specific. Rather, it is a description of the general processes whereby pollutants are delivered to the water bodies of concern.

3.1 Sources of Pollutants of Concern

Point Sources

Table 30. City of New Meadows Wastewater Treatment Plant and Rapid River Fish Hatchery

NPDES ID	Treatment Type	Service area population	Design Flow	Permit Limits E. Coli	Permit Limits Total Suspended Solids (TSS)
ID-002315-9 New Meadows WWTP	Lagoons followed by chlorination	576	0.36 mg/d (0.1mgd average daily flow)	126CFU/100mL 30 day average 406 CFU/100mL instantaneous limit	45 mg/L 30 day average 65 mg/L 7 day average
ID-002237 Rapid River Fish Hatchery	Settling pond	NA	NA	NA	During non-harvest: 5 mg/L 30 day average During harvest: 67 mg/L 30 day average

The New Meadows Wastewater Treatment Plant only discharges occasionally and almost never during the summer months when river flows are low. As the municipality grows the New Meadows Wastewater Treatment plant will go through a series of upgrades to accommodate additional capacity and provide additional treatment of wastewater.

There are no superfund or RCRA sites in the watershed. There is little to no recreational dredge activity in the watershed.

Nonpoint Sources

This description is not intended to be specific. Rather, it is a description of the general processes whereby pollutants are delivered to the water bodies of concern. A detailed description of locations and potential sites for improvement will be located in the final implementation plan.

Phosphorus

Phosphorus is found naturally throughout the environment. It can be present as a constituent of certain rock types (silicous igneous rock) and in the mineral apatite. The environment itself can also be a factor in the phosphorus levels occurring within a region due to the climate, pH of natural waters, and the presence of other substances that may adsorb or release phosphorus. However, there are also anthropogenic nutrient sources that greatly increase phosphorus levels over those found naturally. Applied fertilizers in farming or landscaping, the duration and density of livestock grazing, the creation of artificial waterways and water levels through agricultural practices, and the presence of sewage and septic waste (treated and untreated) in the surface, subsurface, and ground water of a region can significantly elevate the phosphorus concentrations in an area.

Sediment

Sediment may originate from natural causes such as bank erosion, landslides, forest or brush fires, high flow events; or anthropogenic sources such as urban/suburban storm water runoff or erosion from roadways, agricultural lands, and construction sites. Sediment loads within the system are highest in the spring when high flow volumes and velocities result from snowmelt in the higher elevations.

Surface erosion in forested terrain is predominantly a function of slope steepness, soil texture/structure and the amount of root material in the top few inches of soil. Soil characteristics are generally related to the parent material (i.e. granitics).

Mass failures can be predicted by slope steepness and geologic material as well as factors such as whether the area has burned recently or been disturbed by land management activities such as timber harvest. In general, a few mass failures occur every year, but the major contributors of sediment are the major episodes of mass failure that occur during large rain-on-snow events or during other high precipitation events when the soil mantle becomes supersaturated.

The contribution of mass wasting to sediment loading in the Little Salmon River drainage has not been quantified but is potentially high in the canyon section of the river.

Roads, depending upon their condition and location, can deliver large sediment loads to streams. The coarse grained granite and gneiss of the basin physically break down between the mineral grains in the rock, producing sand sized particles rather than silt or clay. In areas where basalt is the parent material, it breaks down into silt and clay sized particles.

Road erosion is directly influenced by road use including season of use, type of use (the heavier a vehicle, the greater the breakdown of the road tread into particles), road drainage patterns and road surfacing. Controlling these variables will affect the amount of sediment delivered to streams.

Temperature

Increases and decreases in water temperature are due to changes in the amount of heat reaching the water. Several factors contribute to the amount of heat reaching the water in the Little Salmon River watershed. The anthropogenic factors include agricultural return water, agricultural withdrawals, dams, and loss of riparian vegetation (shading). Natural factors include seasonal air temperature changes, ice floes, natural dams, and naturally warm springs that feed water to the stream. In addition, at times riparian vegetation has been lost both to manmade (i.e. poor grazing practices, off-road vehicle use) and natural causes (i.e. rain on snow events). Only those anthropogenic sources that are directly controllable are addressed in this TMDL.

Bacteria

Bacteria enter water bodies in a number of ways. In rural and agricultural areas the most common sources are usually domestic animals and wildlife, although failing septic systems can also be a significant source if they are situated adjacent to a water body. Studies have shown that per pound, human waste has higher concentrations of phosphorus than domestic animal waste. Wastewater treatment plants are also sources of bacteria, but bacteria levels are regulated by NPDES permits.

Pollutant Transport***Nutrients***

Consideration of flow is important in the evaluation of nutrient, phytoplankton, periphyton, and rooted macrophyte concentrations. In a riverine system, flow transports phytoplankton and nutrients from upstream to downstream in an advective or dispersive transport mode. In other words, riverine systems are dynamic systems in which nutrients are being continually cycled as the water moves downstream. The flow regimen is important in determining the result of this combination of component concentrations. High flows can flush dissolved nutrients downstream, replacing them with the lower concentrations in the high flows. Since nutrient concentrations are inversely related to flow, nutrient retentiveness is much lower in high flow years than in low flow years. High flows can also scour periphyton and rooted macrophytes, reducing their mass considerably. Finally, high flows can scour sediments causing movement of the sediment downstream and increasing nutrient concentrations at the same time by releasing nutrients tied up in the sediments prior to scouring (IDEQ 2004).

Sediment

While no quantitative information is available, it is recognized that a substantial amount of sediment can be generated and transported relatively long distances by extreme precipitation events such as the January 1997 rain on snow event. It has been estimated these events can account for the movement of a greater volume of sediment in a single event than would be expected to occur in an entire water year under average conditions (BCC 1996). Sediment transport, and the transport and delivery of sediment-bound pollutants, are directly associated with increased flow volumes and high velocities. During peak flows, streams with unstable banks may have high sediment loads due to bank erosion.

Bacteria

Bacteria are primarily transported from their point of origin during precipitation and irrigation activities. Bacteria can enter surface water via movement from manured fields, problem feedlots and overgrazed pastures. Insufficient sewage management systems (septic tanks) may also transport bacteria, especially in areas where the water table is shallow and readily mixes with surface water. Bacteria may also be transported in storm water in areas where storm water is discharged directly to the water body.

3.2 Data Gaps

DEQ uses the most current data available for each watershed and tries to collect additional data if possible. However, DEQ acknowledges that there are additional data that would be helpful to increase the accuracy of the analysis. The datagaps that have been identified are outlined below:

- Little Salmon River
 - Hydrology- information on the interaction between ground water and surface water, daily flow information for Meadows Valley
 - Temperature- ground truthed estimates of existing shade from tributaries above Four Mile Creek and mainstem river in upper watershed
 - Sediment- coarse sediment transport information in lower reach
 - Periphyton- additional benthic chlorophyll-a information
- Three Mile, Four Mile, Goose Creek, Mud Creek, Six Mile, Martin Creek
 - Hydrology-weekly or daily flow information\to determine flows at mouth of creeks
 - Temperature- ground truthed existing shade information
 - Additional habitat information for lowermost reaches near mouth

Where viable, steps should be taken to fill the data gaps. Planned efforts to do so will be further outlined in the TMDL implementation plan. The information developed through these efforts may be used to revise the appropriate portions of the TMDL and determined and/or adjust implementation methods and control measures. Changes to the TMDL will not result in the production of a new TMDL document. Minor changes will be in the form of addenda to the existing document(s). Major changes will be in the form of supplements to the TMDL. DEQ will revisit the TMDL implementation goals every five years in order to assess progress toward implementation.